



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/901,636

07/11/2001

Thomas Malzahn

MALZ3001 / FJD

7902

23364

7590

03/08/2005

BACON & THOMAS, PLLC  
625 SLATERS LANE  
FOURTH FLOOR  
ALEXANDRIA, VA 22314

EXAMINER

JACKSON, ANDRE K

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/901,636

Applicant(s)

MALZAHN, THOMAS

Examiner

André K. Jackson

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Locke in view of Bellee et al.

Regarding claim 1, Locke discloses a "Method and apparatus for material level measurement using stepped frequency microwave signals" which has a signal-generating unit (8), an input coupling unit (12), an antenna (11), and a receiving and evaluating unit (4). Locke does not disclose a dielectric layer containing a feed structure and a plurality of cutouts. However, Bellee et al. disclose a "Dual polarized image antenna" which has a dielectric layer containing a feed structure (25) and a plurality of cutouts (Figures 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Locke to include a dielectric layer containing a feed structure and a plurality of cutouts as taught by Bellee et al. since multiple frequencies can be used with this antenna.

Regarding claim 2, Locke discloses slot shaped recesses that are substantially radial (Figure 4).

Regarding claim 3, Locke discloses where the dielectric layer defines a center with one group of cutouts arranged at approximately a first radius from

the center of the dielectric layer and at least one further group of cutouts arranged at approximately a second radius from the center of the dielectric layer (Figure 4).

Regarding claim 4, Locke discloses where one group of cutouts are spaced from the cutouts of the first group (Figure 4)

Regarding claim 5, Locke does not disclose the dimensions of the slots. However, it is considered a design choice and clearly within the preview of the skilled artisan to have the slots made a particular size.

Regarding claim 6, Locke does not disclose a dielectric layer connected to at least one dielectric on the side containing the cutouts. However, Bellee et al. do disclose a dielectric layer connected to at least one dielectric on the side containing the cutouts (Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Locke to include a dielectric layer connected to at least one dielectric on the side containing the cutouts. By adding this feature the effectiveness of the apparatus would be greatly improved.

Regarding claim 7, neither Locke nor Bellee et al. disclose where the cutouts and feed structure are applied to at least one dielectric layer by etching. However, it is clearly within the preview of the skilled artisan to have the cutouts and feed structure applied to at least one dielectric layer by etching since when adding this feature the effectiveness of the apparatus would be greatly improved.

Regarding claim 8, Locke does not disclose where at least one dielectric layer and dielectric protective layer comprise a circular disk. However, Bellee et al. disclose where at least one dielectric layer and dielectric protective layer comprise a circular disk (Figure 1). Therefore, the skilled artisan would have been inclined to modify Locke to include where at least one dielectric layer and dielectric protective layer comprise a circular disk. By adding this feature the apparatus would be more compact and rugged.

Regarding claim 9, Locke discloses where measuring signals comprise signals in the broadband range (Column 3).

Regarding claim 10, Locke discloses where the antenna and its cutouts cooperate where the antenna emits measuring signals of a selected mode (Column 3).

Regarding claim 12, Locke does not disclose where the dimension and shapes of the cutouts are defined in the planar direction of the first dielectric layer. However, Bellee et al. disclose where the dimension and shapes of the cutouts are defined in the planar direction of the first dielectric layer (Figures 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Locke to include where the dimension and shapes of the cutouts are defined in the planar direction of the first dielectric layer. By adding this feature the effectiveness of the apparatus would be greatly improved.

***Response to Arguments***

3. Applicant's arguments filed 01/28/04 have been fully considered but they are not persuasive. Applicant has argued that the written description of the slots in Belle et al. does not indicate that they are different. However, in figure 5 (shown on the next page) it can be seen that slot (40) is deeper and smaller than slot (45), which is longer and shallower than (40). This constitutes both a different dimension and a different shape from one another.
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (703) 305-1522. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.



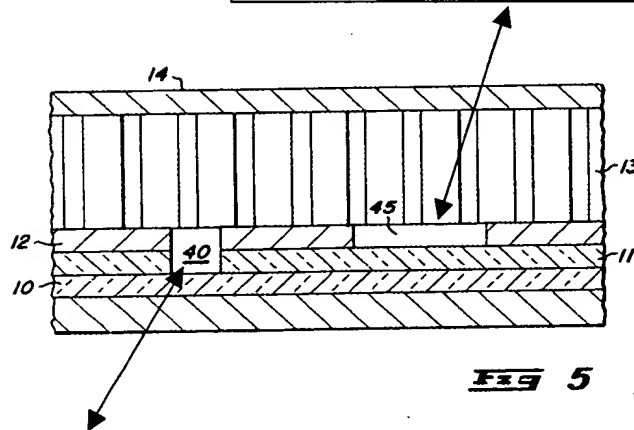
March 7, 2005



HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

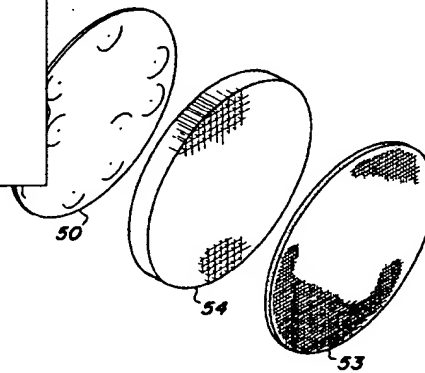
U.S. Patent Apr. 21,

Shallow: Not as deep as (40)  
only as deep as element (12).  
Longer in width when compared  
to (40).

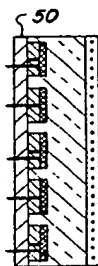


**FIG 5**

Deeper: Reaches down to  
element (10) from element  
(12). Smaller in width when  
compared to (45)



**FIG 6**



**FIG 7**